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BOILERPLATE NO. 14, HOUSE SPACECRAFT NO. 1
SPECIFICATION
PROJECT APOLLO SPACECRAFT
(Unclassified)
NAS 9-150



28 February 1962

4.5.2.3

Approved by

J. W. Paup

Vice President and Apollo Program Manager

CLASSIFICATION CHANGE

To UNCLASSIFIED

By authority of *Boilerplate*
Changed by *L. Shuckey* Date *12/15/62*
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NORTH AMERICAN AVIATION, INC.
SPACE and INFORMATION SYSTEMS DIVISION

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1. SCOPE

1.1 Scope. - This specification covers the requirements for the House Spacecraft Number 1 Boilerplate. The boilerplate shall demonstrate overall structural and functional compatibility of the Apollo Spacecraft.

2. APPLICABLE DOCUMENTS

2.1 General. - The following documents shall form a part of this specification:

Government Documents

Air Force

ARDCM-80-1,
Volume 1

Handbook of Instructions for Aircraft
Designers

National Aeronautics and Space Administration

NCP200-2

Quality Assurance Provisions for
Space Contractors, dated 15
December 1961

Non-Government Documents

Space and Information Systems Division, North American Aviation, Inc.

SID 62-240

Preparation for Delivery of Airborne
Equipment, General Requirements
For

3. REQUIREMENTS

3.1 General. - The configuration of the boilerplate shall be similar to configuration of the prototype Apollo Spacecraft. The configuration of the boilerplate is shown in figure 1.

3.2 Components. -

3.2.1 Arrangement. - The boilerplate shall contain structural provisions for complete systems installation with the exception of live rocket motors. The boilerplate shall include:

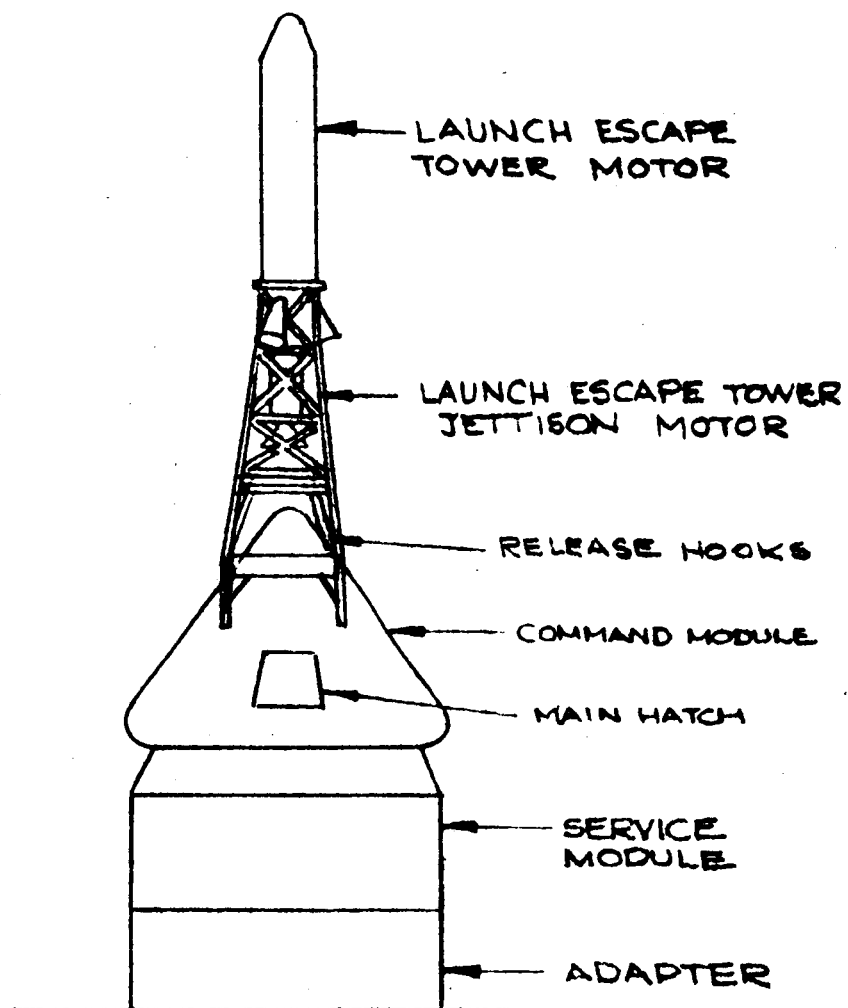
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Figure 1. Boilerplate #14

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- (a) Command Module
- (b) Service Module
- (c) Spacecraft Adapter
- (d) Launch Escape Tower

3.2.1.1 Command Module. - The structure of the command module of the boilerplate shall be a skeletal structure and shall simulate the structure of the prototype command module. The command module shall include a removable outer skin. The command module shall have provisions for mounting the systems in their proper locations. Provisions shall be included for mating the command module to the service module and the launch escape tower.

3.2.1.2 Service Module. - The structure of the service module of the boilerplate shall be a skeletal structure and shall simulate the structure of the prototype service module. The service module shall include a removable outer skin. The service module shall have provisions for mounting the systems in their proper locations. Provisions shall be included for mating the service module to the spacecraft adapter and the command module.

3.2.1.3 Spacecraft Adapter. - The boilerplate shall include a prototype of the spacecraft adapter. The spacecraft adapter prototype shall include provisions for mating to the service module and the Saturn booster.

3.2.1.4 Launch Escape Tower. - The boilerplate shall include a prototype of the launch escape tower. The launch escape tower prototype shall include provisions for mating to the command module.

3.2.2 Equipment. - The equipment for the boilerplate shall include the equipment listed in Appendix I-A and I-B.

3.3 Performance. -

3.3.1 General. - The boilerplate shall be capable of acting as a test platform for mounting primary systems to:

- (a) Evaluate system compatibility
- (b) Develop primary systems to prototype status
- (c) Evaluate the interaction of systems
- (d) Establish preliminary operational procedures
- (e) Upgrade all systems to full prototype.

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The boilerplate shall later be transferred to Atlantic Missile Range for further research and development.

3.4 Design and Construction. -

3.4.1 General. - The boilerplate shall be constructed of materials that will insure structural soundness. ARDCM-80-1, Volume 1, shall be used for guidance and reference material in the design and construction of the boilerplate.

3.4.2 Weight. - The boilerplate shall have a mass and center of gravity similar to the mass and center of gravity of the prototype Apollo Spacecraft.

3.5 Ground Support Equipment. -

3.5.1 General. - Ground support equipment shall be required to transport, demonstrate and test the boilerplate. The requirements for ground support equipment are not part of this specification.

4. QUALITY ASSURANCE PROVISIONS

4.1 General. - Quality assurance provisions for the boilerplate shall be in accordance with the applicable portions of NASA Bulletin NCP200-2.

4.2 Inspection and Tests. - Inspections and tests to determine conformance of the boilerplate to contract and specification requirements shall be conducted prior to delivery to the test site.

5. PREPARATION FOR DELIVERY

5.1 Airborne Equipment. - Airborne equipment shall be prepared for delivery in accordance with Specification SID 62-240.

5.2 Transportation. - Provisions shall be included to transport the boilerplate to the test site.

6. NOTES

6.1 Definitions. - A boilerplate is a simulated spacecraft module for pre-developmental and/or developmental tests leading to the design of a prototype module.

~~CONFIDENTIAL~~Appendix I-AGovernment-Furnished Property, Contractor-Installed

Item No.	Quantity	Communications and Instrumentation Description	Part No.
1	1	Sensors	
2	1	Time Code Generator	
3	2	Recorder	
4	1	PAM-FM Telemeter	
5	1	VHF-FM Transmitter	
6	1	VHF Rescue Beacon	
7	1	VHF Transceiver	
8	1	HF Transceiver	
9	1	Antenna Multiplexer	
10	1	Radar Beacon	
11	1	Command Decoder	
12	4	C-Band Helices	
13	1	VHF Recovery Beacon	
14	1	HF Recovery Beacon	
15	1	Butterfly Antenna	
16	1	HF Whip Antenna	
17	2	VHF Transmitter	
18	1	Discone Antenna	
19	1	Analog Recorder	
20	1	Coaxial Switch	

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~~CONFIDENTIAL~~Appendix I-BContractor-Furnished Equipment, Contractor-Installed

<u>Item No.</u>	<u>Quantity</u>	<u>Power Systems</u> <u>Description</u>	<u>Part No.</u>
1	1 set	Simulated Launch Escape Motor Assembly	
2	1 set	Electrical Power Supply	

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~~CONFIDENTIAL~~Appendix I-BContractor-Furnished Equipment, Contractor-Installed

<u>Item No.</u>	<u>Quantity</u>	<u>Landing Systems</u> <u>Description</u>	<u>Part No.</u>
1	7	Impact Air Bags, Large	
2	4	Impact Air Bags, Pillow	
3		Tension Straps	
4	1 set	Recovery Aids	
5	1 set	Landing Parachutes	

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~~CONFIDENTIAL~~Appendix I-BContractor-Furnished Equipment, Contractor-Installed

<u>Item No.</u>	<u>Quantity</u>	<u>Crew System</u> <u>Description</u>	<u>Part No.</u>
1	1 set	Restraint and Support Equipment	
2	1 set	Provisions	
3	1 set	Relief Provisions	

~~CONFIDENTIAL~~Appendix I-BContractor-Furnished Equipment, Contractor-Installed

<u>Item No.</u>	<u>Quantity</u>	<u>Communications</u>	<u>Part No.</u>
		<u>Description</u>	
1	1	VHF Antenna	
2	1	UHF Antenna	
3		HF Whip Antenna	
4	1 set	Control and Display System	

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~~CONFIDENTIAL~~Appendix I-BContractor-Furnished Equipment, Contractor-Installed

<u>Instrumentation</u>	<u>Part No.</u>	
	<u>Description</u>	
	Cameras	3
	Telescope	1

QuantityItem No.1
2~~CONFIDENTIAL~~